# ALERT PROGRAM® LITERATURE AND RESEARCH:
## Published Literature, Research, and Resources

TherapyWorks, Inc. (TWI) is committed to providing consumers with available evidence, research, and published literature related to the Alert Program®. We hope that families and practitioners will find this published information and objective data helpful to support appropriate use and application of the Alert Program®. This document is updated regularly. The following list of literature, articles and research is organized into four major sections:

## SECTION I: References Specifically Addressing the Alert Program®

<table>
<thead>
<tr>
<th>Type of Literature</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Refereed Professional Journals</td>
<td>2</td>
</tr>
<tr>
<td>B. Professional Newsletter/Magazines</td>
<td>4</td>
</tr>
<tr>
<td>C. Books/Manuscripts/Professional Texts</td>
<td>8</td>
</tr>
<tr>
<td>D. Unpublished Graduate Theses/Dissertations</td>
<td>10</td>
</tr>
<tr>
<td>E. Popular Press</td>
<td>12</td>
</tr>
</tbody>
</table>

## SECTION II: Articles on the Effectiveness of Sensorimotor Strategies that Support Self-Regulation, Learning and Living

<table>
<thead>
<tr>
<th>Type of Literature</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Refereed Professional Journals</td>
<td>13</td>
</tr>
<tr>
<td>B. Professional Newsletter/Magazines</td>
<td>24</td>
</tr>
<tr>
<td>C. Books/Manuscripts/Professional Texts</td>
<td>26</td>
</tr>
<tr>
<td>D. Unpublished Graduate Theses/Dissertations</td>
<td>26</td>
</tr>
<tr>
<td>E. Popular Press</td>
<td>26</td>
</tr>
</tbody>
</table>

## SECTION III: Select Articles on the Relationship of Self-Regulation to Learning

<table>
<thead>
<tr>
<th>Type of Literature</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Refereed Professional Journals</td>
<td>28</td>
</tr>
<tr>
<td>B. Professional Newsletter/Magazines</td>
<td>29</td>
</tr>
<tr>
<td>C. Books/Manuscripts/Professional Texts</td>
<td>29</td>
</tr>
</tbody>
</table>

## SECTION IV: Select Articles on Self-Regulation Assessments / Issues

<table>
<thead>
<tr>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-31</td>
</tr>
</tbody>
</table>

## SECTION V: Select Articles on the Theory of Sensory Integration

<table>
<thead>
<tr>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-33</td>
</tr>
</tbody>
</table>

## SECTION VI: Websites that Provide Additional Support and References

<table>
<thead>
<tr>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
</tr>
</tbody>
</table>
SECTION I

References Specifically Addressing the Alert Program®

A. Refereed Professional Journals


*Comment:* This study examines the appropriateness, extent and types of services provided by occupational therapists to children with emotional disturbances in public schools. Eighty-seven percent of all respondents supported school OT for students with emotional disturbances. The most commonly reported intervention was sensory integration with nearly 47% using the Alert Program® individually and in groups.


*Comment:* An 8-week-long use of the Alert Program® within the classroom setting for 7 children with emotional disturbances demonstrated improvement on all measures as compared to the control group.


*Comment:* This article provides a general intervention framework for individuals with fetal alcohol spectrum disorders (FAS), and the methods and general findings of five specific intervention research studies conducted within this framework. One study, conducted by Children’s Research Triangle of Chicago, developed and evaluated a program of neuro-cognitive habilitation, adapted from the Alert Program®. Results from the 78 children and families studied, suggest the Alert Program® as a promising approach for helping children with FAS improve their self-regulation and executive functioning skills.


*Comment:* The importance of parents’ perspectives in identifying and addressing concerns and goals of children who receive occupational therapy using a sensory integration approach was the focus of this research. Two hundred and seventy-five parents, seeking intervention for their children ages 4-11 years of age responded to open-ended questions designed to elicit their hopes and goals for their children’s therapy. Four categories were identified: 1) self-regulation (72%); 2) social participation (42%); motor skills (40%); and, confidence (39%). Self-regulation was a prominent and overarching concern. The Alert Program® was identified as an intervention to help children self-monitor and self-evaluate performance.


*Comment:* The author provides a review of the publication "Test Drive: Introducing the Alert Program® through Song". From extensive experience as a school-based therapist, the author shares her perspectives on the value and use of the Alert Program® with a school-aged population.


*Comment:* This paper describes an interdisciplinary process of adopting a scholarship of practice approach to generate evidence for intervention programs for students with social, emotional and behavioral difficulties (SEBD). This practice model involved the collaboration between an academic Occupational Therapy Department in an Irish university, Trinity College Dublin, and a support service in the national Department of Education. An initial two-phase process of adapting the Alert Program® for use in the classroom, resulted in positive outcomes and the development of yet another program
for intensive movement intervention (Movement Matters) for a proportion of the more compromised students whose needs were not adequately being met in the classroom setting. This paper demonstrates the value of a scholarship of practice model incorporating evidence based practice from the literature, clinical reasoning by advanced practitioners, and practice based evidence generated in the field.


*Comment:* This study focuses on the importance of education in engaging staff and clients in a program facilitating self-regulation. The authors of this study assessed the effectiveness of education on the consistency of use of sensory rooms within a large mental health facility. Eleven staff and thirty-six clients participated. Results were significantly significant in supporting the effectiveness of training using hands-on, population specific strategies.


*Comment:* The results of this study provide an overview of the concept of self-regulation within the occupational therapy research and practice literature. Because this term, “self-regulation” is widely used by multiple disciplines, there appears to be diverse interpretations and meanings making intra- and inter-disciplinary discussions and interventions challenging. This article traces the history of the concept of “self-regulation” and then focuses on how this term is used by occupational therapists in research and practice literature. 58 articles were reviewed and within 7 of these articles, the Alert Program® was the therapeutic tool of choice. Authors outline importance of their findings for both practice and future research. This is an important article to help practitioners understand the varied levels and theoretical frameworks related to the concept of “self-regulation”.


*Comment:* Eighty-five students (aged 12-13 years) and four teachers were involved in this study. The students were from schools in areas of social disadvantage (in Ireland) and presented with challenging social, emotional, behavioral, and learning difficulties. The Alert Program® was used as a framework for the study. This first phase was occupational therapist led with class teacher support. Students gained an understanding of their challenging behaviors and identified strategies to support themselves in the classroom. The group of students perceived to be the most challenging gave the most positive scores, and 100% of these students indicated an intention to use their new strategies in class. Positive results of this study have lead to the second phase where teachers take the lead role.


*Comment:* This article describes the collaborative project involving teachers and occupational therapists in implementing an adapted version of the Alert Program® in four Irish schools in areas of social disadvantage during the 2011-2012 academic year. Eighty-five students participated with positive results. Reportedly, the most challenging students were the most positive about the program. Self-management was enhanced resulting in greater self-efficacy in those students with a history of low achievement in school. A whole-school approach was recommended based on the positive results obtained.


*Comment:* Previous research has shown that the Alert Program® has improved behavioral regulation and executive functioning (specifically self-regulation) in children with emotional problems. This study asks if the Alert Program® also leads to improved neural functioning in associated regions. Twenty-one children with
FASD, ages 8-12 years, were included in this randomized treatment/control design study with pre-test and post-test measurements using a Go-NoGo functional magnetic resonance imaging (fMRI). Findings suggest the treated FASD groups were starting to resemble children never exposed prenatally to alcohol—possibly implying more mature neural integrity. These findings provide evidence that the Alert Program®, targeting behavioral dysregulation, a core feature of FASD, also yields positive change in critical brain regions underlying this ability.


*Comment:* This study evaluates the effectiveness of a neurocognitive habilitation program, integrating components of the Alert Program® on self-regulation, executive function skills and adaptive behaviors of children, many with a diagnosis of FASD.


*Comment:* This study is one of the first to identify change in brain structure of 29 children with FASD, following a 14 week intervention program using the Alert Program®. Children with FASD, ages 8-12 years, who received treatment demonstrated changes in critical regions of the brain for self-regulation. Results suggest that intervention using the Alert Program® led to increased cortical gray matter and related improvements self-regulation skills including improved emotional and inhibitory control. This research offers preliminary hope for improving executive functioning skills in children with FASD utilizing the Alert Program. Additionally, this study demonstrates a successful procedure for measuring neurocognitive changes in the brain following clinical interventions.


*Comment:* The authors examined the effect of fostering self-regulation in 10 children (ages 6-10) with ADHD. Using an AB study design, individual goals were set to improve self-regulatory abilities. A comprehensive occupational therapy program, based on Sensory Integration Principles incorporating components of the Alert Program®, was implemented. Achievement in fostering sensory, cognitive and social self-regulation in the children was measured in areas of decreased inattention/distractibility, improved on-task behaviors, improved social behaviors at home and school, and positive impact on parents and teachers.


*Comment:* The author describes a three-phase formative process undertaken to design a culturally and contextually appropriate intervention program that addresses self-regulation issues with Aboriginal community school students in western Australia. The Alert Program® was adapted through a collaborative process that included occupational therapists, community members and teachers in rural Fitzroy Valley. The resultant modified intervention (delivery and evaluation) will ultimately be used to assess the impact of the Alert Program® on self-regulation, executive function skills and adaptive behaviors of children, many with a diagnosis of FASD.


*Comment:* This study evaluates the effectiveness of a neurocognitive habilitation program, integrating components of the Alert Program® with interventions used in therapy for traumatic brain injury, for foster and
adoptive caregivers and their children who were prenatally exposed to alcohol. The program is grounded in the premise that difficulties with self-regulation contribute to the daily challenges experienced by this population of children. The study involved 40 children in the treatment group and 38 children in the control group (aged between 6 years to 11 years, 11 months). Results revealed that children in the intervention group demonstrated significant improvements in executive and emotional functioning when compared with the control group. This study provides information about sensory integration and executive functioning needs of children with prenatal alcohol exposure and explains a valuable role for occupational therapy in adapting the Alert Program® with this population while working with caregivers and families.

B. Professional Newsletter/Magazines


*Comment:* This article presents a summary of an AA Digest interview with the Alert Program® creators Sherry Shellenberger, OTR and Mary Sue Williams, OTR.


*Comment:* The Take Five! publication is featured with portions of the text quoted and resources provided.


*Comment:* The Alert Program® is described as one of several valuable tools available to the OT when addressing psychosocial issues of a child in school-based practice.


*Comment:* This newsletter article presents results of a pilot study using the Alert Program® with children with emotional and sensory processing problems.


*Comment:* Presents opportunities for OT practitioner to provide activities that promote mental health in children and youth with developmental disabilities. An overview of strategies for promotion, prevention and intervention is presented. The use of the Alert Program® for promotion and prevention is suggested.


*Comment:* The role of the OT is described in advancing school mental health (SMH). The Alert Program® is presented as a sensory processing approach that assists practitioners in identifying sensory preferences and strategies to enhance attention, behavioral organization and everyday functioning.


*Comment:* Describes collaboration between a school-based occupational therapist and a veteran expert teacher in applying the Alert Program® to an entire classroom. It concludes with how the Alert Program® became an effective classroom management system.


*Comment:* The authors describe the application of the Alert Program® within female rehabilitation psychiatric units in England. The initial pilot was targeted to a group of female patients with a diagnosis of personality disorder who exhibited self-harming behaviors. The authors describe the process of training OTs within a private mental health service and strategies for supporting the therapists’ learning and confidence for
implementing this approach within their respective facilities. While the introduction to this approach is still in its infancy, positive results have become increasingly apparent for patients and staff alike.


Comment: Describes an occupational therapist’s, Christy Kennedy, OTR/L, application of the Alert Program® with children in her private practice in Decatur, Georgia. Anecdotial information provided.


Comment: This author presents a cognitive-behavioral and sensory integrative intervention approach that she has successful applied to pre-adolescent children with a primary diagnosis of anxiety disorders. The modified Alert Program® and The Incredible 5-Point Scale by Kari Dunn Buron and Mitzi Curtis were found to be successful tools in helping these children gain critical self-knowledge and skills in dealing with self-regulation.


Comment: This case study follows the August 13 ADVANCE print edition and provides an excellent description of the author’s application of the Alert Program® concepts to a 10 year old child. The author shares how her intervention included the entire family and the importance of facilitating the use of therapeutic strategies at home, school and during leisure activities. This case demonstrates the role of occupational therapy (OT) in addressing self-regulation for this population and how OT can be an important piece of an integrated approach to helping children with an anxiety disorder.


Comment: Provides an overview of the Alert Program®, including the program’s development and application.


Comment: This article is written from a Speech and Language Pathologist’s perspective and includes an overview of the Alert Program®.


Comment: Describes a touching story from a parent’s perspective using the Alert Program®, along with a one-page summary of the program.


Comment: Describes the development and outcome evaluation of a collaborative interdisciplinary anger management/self-regulation program implemented to a group of children in the public schools. The Alert Program®, was chosen due to its success with children who demonstrate sensory processing/modulation problems.


Comment: The use of an adapted Alert Program® in a classroom environment is described with specific activities cited and the role of the occupational therapist identified. Special considerations and outcomes are presented.

**Comment:** Author provides an historical overview of the role and influence that the Alert Program® has had over the past two decades. Its humble beginnings, the basis for the program's success, the body of research that has emerged, international growth and future development are all addressed.


**Comment:** Describes a preschool play therapy group where the Alert Program® was incorporated.


**Comment:** Describes Williams and Shellenberger’s work in the Gallup NM Public Schools, the development of the Alert Program® and an overview of the program.


**Comment:** This article describes a collaborative interdisciplinary program that developed a sensory-informed attachment therapy for children in treatment foster care. The goals included informing parents on the use of sensory modulation strategies (guided by the principles and concepts of the Alert Program®) to support co-regulation, modeling the use of sensory-rich attachment-based play for the parent and child, and providing the children with a structured, safe and supportive environment for play-based learning. More than 30 children, ranging from 3-12 years of age, were involved in summer sensory experiential group sessions. While no formal outcome measures were employed, anecdotal evidence from staff and families indicated increased attachment behaviors and increased use of sensory strategies to effectively co-regulate children at home and in the community.


**Comment:** Describes incorporation of the Alert Program® into a middle school curriculum.


**Comment:** Describes two occupational therapists’ successful experiences using the Alert Program® in a Michigan school and in a North Carolina private practice.


**Comment:** Highlights some of the key elements of strategies used by occupational therapists when working with children with autism. The Alert Program® was referenced as a means to help children maintain optimal levels of arousal and attention.


**Comment:** The author describes an innovative educational strategy for communicating with the community. A description of a “sensory fair” implemented for a local school is provided and benefits for the endeavor are discussed.


**Comment:** A case example is provided to demonstrate how the Alert Program® may be used to improve social skills of children in a school-based program.

Comment: Author emphasizes the important contribution of occupational therapy practitioners in helping clients learn and practice strategies to help regulate fragile nervous systems. The Alert Program® is introduced as an option for intervention.


*Comment:* Defines ADHD using a case study perspective. One of the treatment modalities discussed is the Alert Program®.


*Comment:* This four page detailed article is designed to give occupational therapists a comprehensive summary of the Alert Program® and gives excerpts from the Leader’s Guide and Introductory Booklet.


*Comment:* Provides brief synopsis about the Alert Program® that precedes the article (same magazine) by Marci Laurel about the parent perspective on the Alert Program®.


*Comment:* This three-page article provides sample information about the Take Five! publication in a manner accessible to all readers.


*Comment:* Describes the use of animal assisted therapy (AAT) in corrections facilities, residential treatment centers and reintegration centers. The author further describes how the Alert Program® is adapted to assist student trainees learn about themselves as well as their dog.


*Comment:* This article describes the implementation of a 6-week evidence-based self-regulation program at a suburban New York public elementary school. The study explored whether the Alert Program® was an effective school-based intervention for improving attention to task in seven students (ages 7-10) with self-regulation/attention difficulties. Results demonstrated a positive impact on the students’ ability to stay focused in the classroom, increased the number and variety of sensory-based strategies used by students, and changed how teachers viewed the effectiveness of sensory-based strategies for improving students’ attention to task.

C. Books/Manuscripts/Professional Texts


*Comment:* An extremely useful book that provides an overview of the therapeutic significance of the mouth for facilitating normal development, including self-regulation. The Alert Program® is introduced (page 22) as a resource for helping learn self-regulation.


*Comment:* Provides a good overview of the Theory of Sensory Integration. Includes discussion of the use of the Alert Program® for children with sensory system modulation issues (p. 185).

Comment: This book contains information about the Alert Program® (chapter 24): Helping Children Manage Their Sensory Needs.


Comment: Using a case study (pp 894-895), the author demonstrates the use of the Alert Program® with a child in the school system.

Just Added


Comment: Ireland’s Department of Education and Skills created The National Behaviour Support Service (NBSS) to promote positive behavior and learning in the school. A model was developed to effectively address the behavioral needs as well as the social, emotional and academic needs of student, with interventions at different levels of intensity and support. In collaboration with Trinity College Dublin, a study on the implementation of the Alert Program® (AP) was conducted to capture the teacher and student perspectives on the program and its perceived relevance for students with social, emotional and behavioral difficulties. A cohort of 118 students and 32 teachers from 17 post-primary schools were involved. Both students and teachers found the AP to be a positive learning experience. Additionally, the AP contributed to the development and enhancement of classroom management strategies for supporting students’ self-regulation. This document represents an effective program evaluation process for enhancement of services in the schools.

Just Added


Comment: Movement Matters is an intensive, individualized multi-sensory movement program designed in response to multi-faceted needs of a small number of students who continue to experience difficulty in school (Ireland). This program emerged following the introduction of two other programs for this population, one being the Alert Program®. Movement Matters was designed to support students who present as inattentive, fidgety, hyperactive and/or restless in class. The program is composed of 20 sessions, run each day for 20 minutes individualized for one or two students at a time. It focuses on the proprioceptive and vestibular systems thus supporting sensory integration abilities. Both qualitative and quantitative data indicate that Movement Matters is an effective intervention for young people who experience difficulties staying on-task in the classroom.


Comment: Discusses the use of the Alert Program® superimposed onto another intervention model (pp. 16-21).


Comment: This publication, based on the Theory of Sensory Integration, provides strong theoretical background, developmental issues, and strategies related to the suck, swallow, and breathe synchrony. The Alert Program® is introduced in the context of self-regulation (p. 27).


Comment: Use of the Alert Program® is discussed in the assessment and consultation section (page 395).

*Comment:* The authors (clinical psychologists) share their experiences with children with ADD and sensory processing deficits. Authors advocate for occupational therapy and the Alert Program® (pp. 21-23).


*Comment:* This publication addresses sensory processing deficits related to learning. A description of the Alert Program® and its value for children (p. 116) is provided.


*Comment:* Chapter describing sensory integration as it relates to individuals with fetal alcohol syndrome. Also introduces the Alert Program® as a valuable tool for use by individuals with fetal alcohol syndrome (pp. 79-82; 97-100).


*Comment:* Grounded in original work of Stanley Greenspan, the author acknowledges the importance of self-regulation to a student’s ability to succeed in the classroom. The development of self-regulation and its importance in providing the foundation for higher metacognitive functions is presented. The primary focus of this text is a look at self-regulation through an exploration of five domains as well as six critical elements to optimal self-regulation that can be applied in the classroom. The Alert Program® is described and demonstrated in relation to the most fundamental of domains—biological self-regulation. This text is an excellent resource for teachers and therapists alike.


*Comment:* Within a text on the Theory of Sensory Integration, the authors present the Alert Program® in Chapter 14: Alternative and Complementary Programs for Intervention.


*Comment:* The Alert Program® is listed as a complementary approach to traditional sensory integration methods (p. 805).

**D. Un-published Graduate Theses/Dissertations**


*Comment:* This thesis describes a qualitative approach to evaluating outcomes of the use of the Alert Program® in eight (8) 4th grade students (4 with ADHD and 4 with typical behavior). Additionally, perceptions of participating teachers, parents and students were documented. Results reported improvement in all 8 children’s ability to work independently and follow instructions. Additionally, there was a reported major change in parent and teachers’ perceptions and interpretations of behaviors that were otherwise thought to be distracting as well as an awareness of strategies to support children’s attempts to self-regulate. Both parents and teachers expressed the need for more training and support in this area.


*Comment:* Study evaluates the effectiveness of a 2 hour Alert Program® (AP) in-service on teacher’s perception of AP interventions. Results suggested that teachers began to interpret children’s behaviors related to inattention differently. Teachers perceived AP sensory strategies used to support self-regulation as being “effective.”
Just Added


*Comment*: This qualitative research utilized a phenomenological approach with six occupational therapy practitioners to explore their perceptions of implementing the Alert Program® with a population of children diagnosed on the autism spectrum. Three significant themes emerged: 1) the importance of ownership and self-advocacy that the Alert Program® brings to both the children and adults involved; 2) the ease of use and carryover across environments; and 3) the value of the tool to therapists in providing a language that makes sense and the ability to adapt the tool to meet individual needs.

Chiodo, P.G. (2010). *Outcomes on attention with an implementation of the Alert Program® in a school-based setting*. Unpublished Evidence-Based Occupational Therapy Scholars Capstone, Chatham University. Pittsburgh, PA. (contact: pchiodotr@aol.com)

*Comment*: A program evaluation was completed on the implementation of the Alert Program® in self-contained language learning disability classrooms (first through third grades). Both quantitative and qualitative outcomes demonstrated an increase in the students’ (sample size of 8) attention to task and a decrease in the amount of redirection required during activities. Additionally, results demonstrated an improved ability of the teachers to recognize the impact of sensory interventions on attention.

Clark, M.N., Pritchett, M.D., & Vandiver, A. L. (2011). *The effects of the Alert Program® on communication and interaction skills of adults with severe and persistent mental illness in a community mental health setting*. Unpublished master’s thesis, Brenau University, Gainesville, Georgia. (contact: mnewkam@tiger.brenau.edu)

*Comment*: This study investigated the effects of the Alert Program® on communication and interaction skills of adults with severe and persistent mental illness. The sample of 8 adults was obtained from a community mental health setting. Findings of the study were found to be statistically significant with increased communication and interaction skills documented. Analysis of results indicated that the Alert Program® was the main contributing factor for increased scores. This has significant implications for OT in that it provides evidence that provision of sensory regulation techniques can help persons with mental illness to better attend and participate.


*Comment*: The author addressed the challenges of meeting the complex needs of regular (inclusive) elementary school classrooms by 11 teachers in Quebec, Canada. Many of the classroom students demonstrate disruptive classroom behaviors due to varied underlying diagnoses contributing to teacher stress, emotional exhaustion, burnout and teachers’ decreased sense of self-efficacy. In viewing both the teacher and the student as “clients” the occupational therapist measured results from implementing focused strategies for improving teacher performance, satisfaction and self-efficacy. Specifically, the study examined the extent to which a one day workshop, related to fostering students’ self-regulation competencies (Alert Program®), followed by eight Occupational Performance Coaching (OPC) sessions over a 13.7 week period might improve the teachers’ perceptions of their occupational roles. Results reflected teachers experiencing improved performance (82%), improved perceived satisfaction (91%), and improved sense of self-efficacy (73%).


*Comment*: This study used a single-subject semi-parametric ratio estimator (SPRE) design and involved 14 subjects with developmental disabilities who displayed atypical sensory processing abilities and resided in a community-based facility. Results supported the hypothesis that the use of the Alert Program® would increase or stabilize communication and interactions skills of this population during group activities.

Albuquerque, New Mexico. (contact: amaddaleni@aol.com)

Comment: Study examines the effect of the Alert Program® on attention and participation of children, with self-regulation difficulties, in an inclusion classroom. Results suggest that the Alert Program® provides some benefits to children with arousal and attention difficulties.


Comment: Study analyzes sensory strategies (adaptation of Alert Program®) for increasing time on task and work production in adults with mental retardation. Three case studies presented; increase in time on task and work production noted but not significantly.


Comment: Study incorporated mixed methodology, using the Model of Human Occupation as a framework to evaluate the effectiveness of the Alert Program®. Results indicated improvement in several occupational performance areas, particularly at home.


Comment: Research focused on the role of school-based OT in literacy programs. A significant result of surveying OT’s reflected that the Alert Program® was one of the two most widely used tools in school-based practice.


Comment: This study evaluated the effectiveness of the Alert Program® as perceived by occupational therapists. 96.6% of respondents reported that use of the AP improves students’ ability to maintain attention to task during class activities.

E. Popular Press


Comment: This article describes how a teacher incorporated information from the two day Alert Program® lecture to support students in her classroom.


Comment: Families Online Magazine, which offers families help from parenting, health, and child development experts, provides an overview of the history and focus of the Alert Program®.


Comment: This is a newspaper article highlighting local research being done. The principles of the Alert Program® are applied in three classrooms for children with FASD at David Livingstone public school in Winnipeg. The Canadian Institutes of Health Research and Canadian Foundation on Fetal Alcohol Research funded this 12-week program, directed by researchers from Toronto’s Hospital for Sick Children. Preliminary results are to be presented in September 2011.


Comment: Provides a review of TherapyWorks, Inc. publication titled An Introduction to “How Does Your Engine Run?”™ The Alert Program® for Self-Regulation (booklet).

Comment: From a parent’s perspective, the author discusses the difference between a sensory diet (created by others) and the Alert Program® (teaching self-regulation)


Comment: (Emphasis on “GENERAL” sensorimotor strategies). A lay-person’s introduction regarding children’s use of sensory strategies (hair twirling, sucking thumb, etc.) to a child’s ability to attend and self-regulate. The Alert Program® is specifically mentioned in this article.
SECTION II

Articles on the Effectiveness of Sensorimotor Strategies that Support Self-Regulation, Learning, and Living

The following articles are organized alphabetically with notes in the comment sections that correlate to the Alert Program®’s five ways to change alert levels: Mouth, Move, Touch, Look, and Listen.

A. Refereed Professional Journals


*Comment: (Emphasis on "Listen" strategies).* This study examined the impact of using either music, speech or silence on arithmetic tasks by children diagnosed with ADHD and non-disabled children. Results indicate a significant increase in number of arithmetic problems attempted and in the number of correct answers for children with ADHD. This provides support for the prevalence of self-regulation issues (under-arousal/optimal stimulation theory) of ADHD.


*Comment: (Emphasis on "Move" strategies).* This single-subject design research examined the effectiveness of therapy ball chairs on classroom participation in 6 boys with autism spectrum disorder. The ball chair had the most significant impact on those boys who had the most vestibular-proprioceptive-seeking behaviors. Those children who demonstrated postural difficulties demonstrated least improvement in participatory behaviors. This research reinforces the need for skilled clinical reasoning and individualizing strategies for each child’s unique needs.


*Comment: (Emphasis on "Move" strategies).* Teacher’s rating of classroom behavior was better for 8- to 9-year old children who experienced recess than those with none/minimal. These findings support importance of recess for learning and attention.


*Comment: (Emphasis on "Mouth"/breathing strategies).* A model that focuses on yogic breathing as a unique method for balancing the autonomic nervous system and influencing psychological and stress-related disorders is presented. Neurological mechanisms contributing to the state of calm alertness are described.


*Comment: (Emphasis on "Mouth"/breathing strategies).* This study provides evidence to consider Sudarshan Kriya Yoga breathing as a potentially low-risk adjunct treatment. The power of yoga techniques in enhancing well-being, mood, attention, mental focus and stress tolerance is presented. The feasibility of integrating yoga breath techniques into school curricula is explored.


*Comment: (Emphasis on "Look" strategies).* This study emerges from the discipline of education and focuses on the use of visual prompting strategies to increase on-task and on-schedule behaviors for students with high-functioning autism. Results supported the use of graduated guidance procedure and picture-activity schedule teaching strategies in teaching students with autism to engage in on-
task and on-schedule behaviors. All of the four students involved in this study became more independent using the picture schedules and relied less upon adult prompting during literacy-based activities.


*Comment: (Emphasis on "Move" strategies).* This study evaluated the effectiveness of providing systematic exercise eight times per day in reducing challenging behaviors in a school environment. Results of the study demonstrate success of exercise in decreasing the frequency of challenging behavior to zero or near-zero levels in three students with moderate to severe developmental disabilities and an emotional disorder. Challenging behaviors decreased to zero for two participants and near zero for the third participant. Types of exercises are clearly described. Intrinsic motivation of students was noted. It also demonstrated how teaching staff is able to successfully implement and document the program across the entire day and across all school environments.


*Comment: (Emphasis on "General Strategies").* Anecdotal evidence is presented suggesting that sensory processing disorders may potentially play a large role in children and youth demonstrating affect regulation problems (e.g. bipolar disorder, oppositional defiant disorder). This article presents a case report where diagnosis and management includes the development of a sensory diet. While not mentioned specifically, the Alert Program® provides a structured program to assist professionals in developing such a sensory diet and enhancing self-knowledge with this population. A narrative review of the literature is also provided.


*Comment: (Emphasis on "Listen" strategies).* This paper reviews the literature to examine evidence from three fields of experimental research relevant to the issues of whether music listening and instruction can improve non-musical cognitive and academic abilities in children. Research examined suggests that the Mozart effect (influence of focused music listening on task performance) cannot be reliably demonstrated in children. Music instruction demonstrates consistent benefits for spatiotemporal reasoning skills. Background music was reported to calm and focus children with special needs, thereby enhancing learning.


*Comment: (Emphasis on "Listen" strategies).* The purpose of this study is to determine if easy-listening background music could be used to increase on-task-performance of children in a classroom setting. Twenty-six fifth grade students (15 boys; 11 girls) were observed during 42 class sessions over a period of four months. Results indicate that the use of easy-listening background music was effective in increasing on-task performance of the children with a greater effect observed in boys than girls (thought to be the result of a ceiling effect for girls).


*Comment: (Emphasis on "Move" strategies).* The study tests the effect of aerobic exercise on executive function in overweight children. Ninety-four overweight children ranging from 7-11 years of age were randomly assigned to three groups: 1) low-dose exercise; 2) high-dose exercise; or 3) no-exercise control group. The high-dose group demonstrated significantly greater on executive function processes (strategy generation & application, self-regulation, intentionality, & utilization of knowledge). This study provides additional evidence in support of the important role of the Alert Program®’s use of sensory-motor strategies for organizing higher level cognitive functioning.

Comment: (Emphasis on “Touch/Deep Pressure” strategies). This pilot study investigates the effects of deep pressure, using Grandin’s Hug Machine, on children with autism. Twelve children with autism were randomly divided between two groups: those who received the Hug Machine twice a week for 6 weeks (experimental group), and those who did not (placebo group). Behavioral and physiological indicators of arousal were measured before and after deep pressure was provided. Results support previous reports that deep pressure appears beneficial for children with high levels of anxiety or arousal. Authors suggest that there may be a threshold of anxiety or arousal required for deep pressure to be beneficial.

Just Added


Comment: (Emphasis on “Move” strategies). The authors studied whether there were differences in physical activity levels between students who use stability ball and those who use chairs. Additionally, they examined whether the students exhibit higher levels of on-task behavior when using stability balls. All fourth-grade students from two classrooms participated in this study. One classroom was randomly assigned as the treatment group (n=23) and one classroom was randomly assigned to the control group (n=21). Each participant wore an actigraph accelerometer, an accurate and valid motion sensor for research with children. Results indicated that students were engaged in light intensity levels of physical activity while on stability balls and that this level did not appear to pose a distraction to teachers during instruction. Students seated on stability balls did not differ in on-task behavior from those using chairs; however, the authors state that short duration of the study may have had an effect. Because stability balls were found to not disrupt classroom activities, the authors encourage additional research with students who demonstrate high levels of inattention and hyperactivity.


Comment: (Emphasis on “Touch” strategies). Twenty children (ages 3 to 6 years) were randomly assigned to massage and reading attention control groups. The massage group received 15 minutes of parent provided massage prior to bedtime every night for one month. The study results demonstrate significant improvements in off-task behavior and sleep problems, and children were noted to be more attentive at school. Stereotypical behaviors also decreased in the classroom and on the playground.


Comment: (Emphasis on “Move” strategies). This article describes the outcome of the 2005 North Carolina State Board of Education policy to include a requirement for physical activity for kindergarten through eighth-grade students throughout the state. An on-line survey was conducted to explore how districts were meeting the physical activity-related portion of the policy and also to explore the implementation successes and challenges. Results indicated many positive results for both students and staff. Benefits identified were numerous with greater student focus and student alertness included.

Just Added


*Comment:* (Emphasis on "Move" strategies) The researchers used a randomized controlled design to evaluate the effect of using stability balls (67 second-grade students) on academic achievement and discipline referral levels and on (16 students) on-task behavior. Findings suggest that stability ball usage did not result in significantly greater on-task behavior or academic achievement. There was an overall decrease in discipline referrals for the treatment classrooms. It is suggested that stability balls provide needed physical activity (movement), which can increase positive classroom behaviors, fitness and mental health.


*Comment:* (Emphasis on "Move" strategies) Using a single-subject A-B research design, researchers evaluated the effects of stability balls on in-seat and on-task behavior of eight 4th & 5th grade students with attention and hyperactivity concerns. Results revealed increased levels of attention, decreased levels of hyperactivity, and increased time on task and in-seat/on ball time. This study provides additional evidence for the use of a movement strategy (via therapy ball) to support attention and learning.


*Comment:* (Emphasis on "General" strategies). These authors report two cases of adult individuals with neuropalliative conditions which, due to the complexity of these types of disabilities, often lead to passive lifestyles and spectator roles. The two case studies presented illustrate the development of casual lifestyles based on sensory profiles and tailored around the sensory diet framework. Results demonstrate the successful use of the sensory diet as a guide through which to plan leisure routines leading to an enhanced quality of life.


*Comment:* (Emphasis on "Move"/proprioception/heavy work/ strategies). This study examined the effectiveness of using weighted vests with preschool children with pervasive developmental disorders on attention and fine motor tasks. Results suggest that vests helped increase attention to task and decrease in self-stimulatory behaviors.


*Comment:* (Emphasis on "Move" strategies). This study, including 20 children with autism and 26 typically developing children, aged 8-17, investigates perception of motion. Results show that people with autism have enhanced visual abilities with heightened perception of motion. This outcome suggests that brains of individuals with autism keep responding more and more as intensity increases which can lead to sensory overload. This study supports the need for ongoing critical reasoning and problem solving by the practitioner in providing movement strategies for individuals with autism. Behavioral observations help determine the just right movement modality supportive of attention and learning.


*Comment:* (Emphasis on "Move" strategies). The purpose of this study is to examine the effects of varying types of exertion on immediate attentional performance on 138 regular primary school boys
and girls. The three types of exertion: 1) physical exertion (primarily physical education/cardiovascular in nature); 2) cognitive exertion; and 3) cognitive and physical exertion.


**Comment:** (Emphasis on deep pressure “Touch” strategies). Temple Grandin provides an overview of the clinical effects of deep touch pressure and provides a description of her deep touch pressure device (“squeeze machine”) that helped her overcome problems of oversensitivity to touch and that allays her nervousness. Additionally, she surveys animal literature on deep touch pressure, revealing similar calming reaction. She concludes with suggestions for clinical use with humans.


**Comment:** (Emphasis on “Listen” strategies). This study supports the use of therapeutic listening intervention coupled with a sensory diet to improve behaviors (including attention) of children related to sensory processing difficulties.


**Comment:** (Emphasis on “Listen” strategies). The researchers examine the use of “calming” music in a class of children with emotional and behavioral challenges in hopes of improving behavior and performance in mathematics. The population included eight boys and two girls (n=10) attending a day school of children with emotional and behavioral difficulties (all normal IQ). All students performed better on the math tasks when background music was present. Those who benefited most were those whose difficulties were associated with constant stimulus seeking and over-activity behavior. Those who benefited least were reported by staff to have emotional problems related to identified history of abuse, separation and loss.


**Comment:** (Emphasis on “Listen” strategies). This paper presents two studies that explore the effect of music on arithmetic and memory tasks of children aged 10-12. Findings suggest that the effects of music are mediated by arousal and mood versus affecting cognition directly. Practical applications are discussed for primary school and home.


**Comment:** (Emphasis on “Move” strategies). This study, a randomized controlled trial, used behavioral and electrophysiological measures of brain function to demonstrate enhanced attentional inhibition and cognitive flexibility for improved childhood cognition and brain health. Two hundred twenty-one children (7-9 years of age) were randomly assigned to a 9-month afterschool physical activity program. Outcomes support the importance of physical activity for optimal executive function, including attention and alertness.


**Comment:** (Emphasis on “Move” strategies). This study explored the effects of different recess timing regimens on preschool students’ attention in the classroom. Findings reveal that post-recess attention was greater following sustained outdoor play with girls demonstrating greater attention than boys. This study supports the need for movement—specifically recess—for bolstering children’s sustained attention in the classroom.
Just Added  

*Comment: (Emphasis on "Mouth" strategies).* The finding of Scholey, et al., 2009, related to chewing gum and its ability to influence stress and mood changes following a multi-task cognitive stressor, was re-examined. Contrary to this earlier work, the findings of this study indicate that chewing gum fails to impact self-rated anxiety, calmness, and contentedness. However, the findings do contribute to the growing body of studies suggesting that chewing gum can improve alertness.

Just Added  

*Comment: (Emphasis on "Mouth" strategies).* This study examines the effects of chewing gum on sustained attention. Self-rated measures of alertness, contentedness and calmness were taken before and after a task. Results support results of past studies on the effects of chewing gum on attention with evidence that chewing gum can facilitate sustained attention and elevate perceptions of alertness.

Just Added  

*Comment: (Emphasis on "Mouth" strategies).* The effects of gum chewing on standardized test scores and class grades of 108 eighth grade math students was examined. Students assigned to the gum chewing group demonstrated significantly higher math test scores when compared to students assigned to the no-gum group. Effects, however, were modest. The conclusions shared suggest that use of gum chewing is an easy and inexpensive strategy to support academic performance in schools.


*Comment: (Emphasis on "Touch" strategies).* This study, employing a single-subject alternating treatments design, evaluated the effectiveness of fine motor (fidget) activity on students’ ability to engage in math problem solving activities. Eight 4th & 5th grade students with attention problems participated. Results suggest that fine motor manipulation of a tactile stimulation object reduced excessive motor movement and increased task completion.


*Comment: (Emphasis on "Touch"/deep pressure strategies).* This study investigated changes in salivary cortisol (stress hormone) following administration of the Wilbarger protocol to children diagnosed with sensory defensiveness.


*Comment: (Emphasis on "Mouth" strategies).* Conclusions suggest that chewing gum may have a positive impact on cognitive function, specifically concentration and focus and weight management.

Comment: (Emphasis on "General Strategies"). This study was conducted to measure whether sensory processing strategies could reduce excessive activity levels in children with sensory integration dysfunction. Thirty-six (36) subjects equally divided between the intervention and control groups and ranging in age from 36-72 months of age, were selected from kindergarten classrooms in three different towns of central Taiwan. Those children who ranked in the 73rd percentile or higher on the Test of Sensory Integration Function, who did not receive any sensory integration treatment during or before the study, and who could be matched to the intervention and control groups were included in the intervention group of the study. Although the treatment effect did not reach statistical significance, activity level improved in the intervention group. Results could not exclude a developmental effect over the 8-week session.


Comment: (Emphasis on "Move" strategies). This study evaluated the effects of a classroom-based physical activity program on children's in-school physical activity levels and on-task behavior during academic instruction. Results indicated significant improvements in directly observed on-task behavior. This behavior was particularly strong among the least on-task students with an increase in on-task behavior of 20% after participation in 10 minutes of physical activity. This study provides support for use of the Alert Program® MOVE strategies in supporting appropriate arousal and attention levels.

Just Added


Comment: (Emphasis on General input). This scientific research study examines an important aspect of clinical practice when using a Sensory Integration (SI) clinical approach. Basic to the SI theory is that occupational performance requires the integration of information from multiple sensory modalities. Integration of information from multiple senses is basic to perception and cognition. Consequently, it can be said that a combination of sensory information has greater effect on function with regards to organization and CNS reaction time. This study examined the timing and topography of cortical auditory-visual interactions. Both visual and auditory sensations were presented alone and simultaneously and it was found that when presented simultaneously, response time was significantly faster than when stimuli were presented alone. This study contributes to the growing literature on the spatiotemporal properties of cortical multisensory processing in humans. Further research is needed to determine whether enhanced multisensory activity is unique to particular combinations of the senses. Additionally, the interaction of the individual with the environment and task also influences the power of the multisensory integration.


Comment: (Emphasis on "Touch/Deep Pressure" strategies). This study provides the results of an initial exploratory study on the safety and effectiveness of using a 30 lb weighted blanket with 32 non-acute, non-hospitalized adults. Quantitative and qualitative metrics were piloted to determine use in future studies with adults during an acute inpatient mental health hospitalization and a nonacute, volunteer adult population subjected to a high anxiety task. Results indicate that the use of the 30 lb blanket has a calming effect for some adults. Results also highlighted limitations and future considerations for ongoing research in this area.


Comment: (Emphasis on "Move" strategies). Results indicate that students are less attentive and work less efficiently when confined to classrooms in continuous instruction time. Findings support importance of recess (movement) for student attentiveness in the classroom.

Comment: (Emphasis on "General Strategies"). This study explored the effectiveness of yoga for improving time on task with 10 elementary school children with attentional problems. Activities implemented included physical postures, deep breathing and relaxation exercises. Results contribute to the existing literature on yoga's role in improving children's attention in school and suggest that yoga may become a promising alternative or complement to existing interventions for attentional difficulties.


Comment: (Emphasis on "Move" strategies). This randomized controlled trial design study investigated the effectiveness of a dynamic seating system for improving attention to task in 63 second-grade students. The results provide preliminary evidence for the use of the Disc 'O' Sit cushion as an occupational therapy intervention to improve attention in the school setting.


Comment: (Emphasis on deep pressure "Touch & Move" strategies). This quasi-experimental pilot study demonstrates the effectiveness a self-treating lifestyle, including activities either daily or several times a week that provide proprioceptive, vestibular and/or tactile stimulation, on 15 adults who self-identified as having sensory defensiveness in one or more sensory systems. Results of the study provide significant support for the relationship between anxiety, attentional difficulties and sensory defensiveness in adults with no psychiatric diagnoses.


Comment: (Emphasis on "Move" strategies). Study investigates whether children's activity level is functionally related to working memory demands associated with executive functioning. Results support the use of movement to improve working memory and attention and suggest that behavioral programs to reduce movement may indeed be counterproductive to improving classroom performance.


Comment: (Emphasis on "Move"/proprioception/heavy work strategies). This research focuses on the effects of deep pressure stimulation, applied through a Vayu Vest (Therapeutic Systems, Amherst, MA) on both performance and autonomic arousal in a normative adult sample of fifty individuals. Results support the use of deep pressure stimulation to change one's physiological arousal. Results provide further evidence for the use of deep pressure with people who experience difficulty with arousal regulation and sensory modulation during or in preparation for functional tasks.


Comment: (Emphasis on "Listen" strategies). The participants in this study included 10 boys aged 11-12 years identified as having special needs including emotional and behavioral difficulties. Only the orchestral compositions by Mozart that, were previously identified as producing statistically significant depressions of the systolic and diastolic blood pressure, pulse rate and body temperature, were used in this study. Seven different tapes, utilizing the same music compositions, but adulterated (i.e. speeded up, slowed down, played in reverse, adjusting frequencies) were each played during ten successive science lessons, each lasting 40 minutes. Music variations were evaluated for results. Results clearly suggest that there are qualities present, in certain Mozart orchestral compositions, that result in improved behaviors in additions to directly affecting the parameters of blood pressure, body temperature, and pulse rate.

Comment: (Emphasis on "Mouth" strategies). Three case studies are presented that demonstrate the therapeutic benefits of a “chewy” (rubber tubing). Use of chewy seemed to have a calming, organizing, and focusing effect on the child. The included literature review provides supporting benefits of oral motor input to support attention and learning.


Comment: (Emphasis on "Move" strategies). Study investigates the effects of therapy balls as classroom seating on a students in-seat behavior and legible word productivity. Results found that use of the therapy ball had potential to meet individual movement needs to help children achieve optimal state of arousal for attending and learning.


Comment: (Emphasis on "Move" strategies). A single-study withdrawal design was used to measure the effects of using therapy balls as seating on engagement and in-seat behavior of 4 children with Autism Spectrum Disorder (ASD). Findings indicated substantial improvement in both in-seat behavior and engagement across all four participants. Additionally, teachers and students reported a preference for therapy balls, versus other seating options.


Comment: (Emphasis on "Listen" strategies). This pilot study explored the effects of Integrated Listening Systems (iLs) for children with sensory processing impairments. Individual parent goals and perceptions were the repeated measure for outcomes. Analysis focused on physiological arousal. Improvement in home and school goals were observed suggesting that the iLs program would be a useful tool to support arousal behaviors for school and/or clinic-based intervention.


Comment: (Emphasis on "Mouth" strategies). Authors of this study investigate whether chewing gum can ameliorate both self-rated affective states and hormonal changes (cortisol levels) associated with acute, laboratory psychological stress, thereby improving task performance. Forty healthy, non-smoking young adults participated. Extensive discussion of the various components of chewing gum and potential affects is provided. Data from this study suggest that, compared with the no chewing condition, chewing gum is associated with significantly higher alertness as well as reduced subjective stress and state anxiety with resultant positive effect on mood.


Comment: (Emphasis on "Touch" strategies). Article presents the results of a randomized controlled study evaluating the effect of Qigong massage directed toward improving sensory integrative dysfunction in children with autism. Of significance, the use of massage intervention resulted in improved ability of the child to socially orient and to remain calm while making the many transitions required by family and preschool life. Results are encouraging in support of massage as an easily administered strategy for treating sensory and self-regulation problems in children with autism.

**Comment:** (Emphasis on “Touch” strategies) Following an earlier study resulting in positive outcomes from the trainer delivered Qigong Sensory Training treatment of young children with autism (Silva, L.M.T., et al, 2009), a randomized controlled trial was initiated involving parents in the treatment implementation. Forty-seven children were randomly assigned to treatment and control groups. Outcomes were evaluated in two settings—preschool and home. Results indicate significant improvement for treatment group participants with less improvement noted in more severely impaired students. Parents’ improved confidence and sense of empowerment in providing intervention at home as well as notable change in their child were observed.


**Comment:** (Emphasis on "Mouth" strategies). This study involves 133 volunteers. Alertness and stress were measured by cortisol levels. Volunteers carried out tasks measuring a range of cognitive functions, including memory, selective and sustained attention, psychomotor speed and accuracy. Results support that chewing gum is associated with greater levels of alertness and a more positive mood. Reaction times were quicker, selective and sustained attention improved and heart rate and cortisol levels were higher when chewing, confirming the alerting effect of chewing gum.


**Comment:** (Emphasis on “Move” strategies). This pilot study examined the effects of a before-school physical activity (movement) on behaviors of 17 children (grades K-3) diagnosed with ADHD. Pilot results suggest that sustained involvement in physical activity benefits motor, cognitive, social and behavioral functioning in young peoples exhibiting ADHD symptoms. Parents, teachers and program staff reported overall improvement with most participants (64%-71%). Article’s review of literature documents studies that support the use of physical activity on neurological functioning.


**Comment:** (Emphasis on "Mouth" strategies). This study investigates whether a person’s individual differences underlie the cognitive benefits of chewing gum. This research replicated the null cognitive effects observed in several recent chewing gum experiments. However, this study helped identify individual differences where chewing gum is more likely to produce cognitive benefits: where people feel thirsty, in introverts, and where mental performance is sub-optimal. Cognitive benefits with chewing gum may occur through alleviation of stress and of thirst.


**Comment:** (Emphasis on "General Strategies"). This author present issues of arousal often seen in adolescents and adults with substance abuse issues. Sensory-motor intervention strategies focusing on self-regulation/arousal result in patients feeling a sense of increased independence and responsibility for themselves. Following treatment, staff report that patients demonstrate improvement in anger control, reduced impulsivity, marked relaxation and reduced hyper-arousal and increased attention span during group activities. All patients who followed their sensory-motor intervention plans were able to successfully complete the chemical dependency treatment where previous behavioral issues prevented such.

**Comment:** (Emphasis on "Mouth" strategies). A 58-person study found a significant positive effect of chewing gum on sustained attention, but not on improvement on participants’ memory function.

Just Added


**Comment:** (Emphasis on "Move" strategies) The effects of therapy cushions used by 2 kindergarten students with autism spectrum disorder (ASD) and sensory processing differences was evaluated. The data did not reveal substantial changes in sitting or task-related behavior for either student when sitting on a cushion. Analysis of sensory input provided by the cushion was provided to determine variables influencing outcomes.


**Comment:** (Emphasis on "Move" strategies). This study investigates the use of weighted vests on students’ on-task classroom behavior. Results support the use of deep pressure via a weighted vest to increase on-task behavior for children with attentional difficulties.


**Comment:** (Emphasis on "General Strategies"). Sleep is essential for the maintenance of all biological systems, including biochemical. Sleep helps balance the biochemistry of the body. This study provides evidence to link sleep patterns of adolescents to alertness, mood, peer-relationships and general academic and life competencies. The presented evidence encourages the practitioner to examine sleep patterns when working with adolescents who present with self-regulation difficulties. Addressing sleep routines may be a critical strategy for helping to organize the biochemistry of alertness.


**Comment:** (Emphasis on "General research strategies"). This study provides an overview of physiological measures or biomarkers that are beginning to be used by occupational therapy researchers in measuring the complexity and effects of stress, self-regulation and arousal systems on occupational performance. This article provides valuable information to support practitioners in understanding the occupational relevance of these physiological measures and thereby enhancing the ability to share this emerging body of research-based evidence with an interdisciplinary audience.


**Comment:** (Emphasis on "Mouth" strategies). A 75-person study showed that chewing gum appeared to improve people’s ability to learn, retain and retrieve information.


**Comment:** (Emphasis on "Look", “Listen” and olfaction strategies). This is an educator focused article on sensory-filled strategies based on brain research. Classroom strategies for teachers is provided with research summaries (no citations or references provided).
B. **Professional Newsletter/Magazines**

**Just Added**


*Comment: (Emphasis on "Mouth" strategies)* This publication provides a nice overview of self-regulation and its importance to daily routines. Special emphasis is on oral (Mouth) input. The reader is provided with suggestions and advice on how to use the lunch box as effective means for providing organizing "mouth" input for self-regulation.


*Comment: (Emphasis on "Listen" strategies)*. This article, the first of a two-part series, presents the history as well as the neurological and theoretical foundations of sound therapy. The properties of sound therapy are described which helps guide a practitioner in integrating sound therapy programs into a sensory integration approach to intervention.


*Comment: (Emphasis on "Listen" strategies)*. Historical descriptions and summaries of sound therapy methods. It mentions self-regulation as a positive outcome of Therapeutic Listening™.

Goldstein, K., Huang, S., & Tu, K. (June, 2013). Sensory modulation therapy quality assurance study. *Behavioral Health (Kings County Hospital Center/Behavioral Health Services), 4:12*, 1-2.

*Comment: (Emphasis on "General" sensory strategies)*. Three occupational therapy students observed and conducted their own sensory modulation groups in an in-patient behavioral health unit. In this newsletter article, they described their program as well as the quality assurance study that they also implemented. Results of the study reflected that the belief in the efficacy of Sensory modulation therapy as an effective treatment tool was unanimously positive.


*Comment: (Emphasis on "Listen" strategies)*. Preliminary electrophysiological findings of this study show a combination of sensorimotor therapy and sound intervention to be effective in treating children with auditory processing disorder and attention disorders.


*Comment: (Emphasis on deep/pressure "Move" strategies)*. A COTA describes her experience using deep pressure from weighted products to benefit individuals with autism or a sensory processing disorder. The article provides case stories demonstrating effectiveness as well as providing protocols for implementation, precautions and contra-indications.

**Just Added**


*Comment: (Emphasis on "Move" strategies)*. A movement-based instructional pilot program is discussed. Seven teachers participated in a program of "activity bursts" integrated into the daily classroom routine. Baseline data was collected and outcomes measured following 15 consecutive school days. Overall, teachers reported a reduction of lost instruction time due to behavior redirection, and improved student focus, behavior, and attention. Readers are directed to resources and manuals online.
Just Added  


*Comment:* (Emphasis on "Touch", "Move" strategies) This study consisted of a single subject pre- and post-intervention research design. A 32 year old male, with symptoms of sensory modulation disorder (SMD), participated in a clinical assessment, followed by a three-part intervention process: 1) "detective" work by both subject and OT related to subject’s sensory make-up, relationship to functional activities, and provision of general information to subject about sensory modulation; 2) provision of therapeutic activities including deep pressure tactile, vestibular and proprioceptive input (organizing in nature); and 3) aerobic activity that provided heavy proprioception and vestibular input. A consultation model was used as subject engaged in activities each day for 5 weeks. Results reflected behavioral changes that positively affected the subject’s life. It was concluded that intervention that incorporates self-knowledge, self-advocacy, choice, control and therapeutic activities integrated into daily life seems to offer the most promise for individuals with SMD.

Just Added  


*Comment:* (Emphasis on "General" strategies). The author, a mental health occupational therapist, describes a program designed to help foster care children calm down and self-regulate. These are children who, because of past trauma, have high needs and difficulty with their behavior. Using a sensory integration framework, the author evaluates the child in the foster home and creates a home program supportive of the child's emotional regulation, collaborating with foster care families.


*Comment:* (Emphasis on "Listen" strategies). This article is the second of a two-part series focusing on sound therapy programs and how to apply these programs in occupational therapy practice. This article describes the most commonly used sound therapy programs, describes the pediatric populations that may benefit from such programs, examines the outcome effectiveness of cited programs, and finally, provides a case example.


*Comment:* (Emphasis on "Move" strategies). This physical therapist (author) discusses the benefits of physical movement with regard to school performance. The role of physical and occupational therapists in consulting with teachers on how to bring movement into the classroom is discussed.


*Comment:* (Emphasis on "Touch" & "Move" strategies). This author is a teacher who later became an O.T. She addresses the importance of doodling in the support of attention. The article cites research supportive of doodling to increase attention in the classroom and helping children learn.


*Comment:* (Emphasis on "Move" strategies). Use of the standing desk in both regular education and special education is discussed. Multiple benefits include: 1) improved attention, focus and task completion; 2) comfort and ergonomically correct positioning; 3) calorie consumption and general promotion of health. Multiple studies are cited supporting benefits.
C. Books/Manuscripts/Professional Texts

Comment: This publication reflects an extremely practical blend of behavioral and sensory approaches to address day-to-day functioning, including self-regulation.

D. Unpublished Graduate Theses/Dissertations

Comment: (Emphasis on “TOUCH” strategies). This single subject A-B-A-B design reports significant (40%) improvement in on-task behaviors and suggest, due to this preliminary study, that fidgets have promising implications for use with this population.

E. Popular Press

Comment: (Emphasis on “Touch” strategies). Author describes study by Mark Rapport, PhD related to fidgeting as a support for under-aroused brain function and working memory. Author encourages parents to talk with teachers about acceptable levels of movement to support their children’s learning.


Comment: (Emphasis on “Move” strategies). Canadian Teacher Allison Cameron integrates treadmills, stationary bicycles, and weightlifting into Grade 8 class instructions for special needs students. She found 20 minutes of exercise translated into 2 hours of sustained concentration from students. Disciplinary problems decreased (67%) and use of medications plummeted. Importantly, attendance and academic performance improved.


Comment: (Emphasis on “General” sensorimotor strategies). In this popular press overview of the senses, authors discuss the importance of nurturing natural and uniquely individual sensory-motor capabilities and the effect of this nurturing on an individual’s health, emotions, even intelligence. Results of research on individual sensory systems can enhance the practitioners understanding of self-regulation.


Comment: (Emphasis on “Touch” strategies). Describes a recent study from University of Central Florida (UCF) that suggests that it is better to let children jiggle and fidget to facilitate learning. Suggests that children use movement the way adults use caffeine to stay focused.


Comment: (Emphasis on “Move” strategies). This news article describes a 4th grade teacher’s solution to fidgety, distracted and inattentive students. Replacing plastic desk chairs for therapy balls has been successful in increasing attention & concentration, improving posture, and helping burn calories. The school plans to purchase more balls to expand the experiment.

Comment: (Emphasis on “Move” strategies). This local College Station, Texas television station highlights a research project that focused on the benefit of using adjustable height stand-up desks in the classroom. The leading researcher, from Texas A&M Health Science Center School of Rural Public Health, found that students who used stand-up desks are not only burning calories, but also improving stamina while building a stronger attention span.


Comment: (Emphasis on "Move" strategies). Discussion regarding recent research by Dr. Romina Barros suggesting that play (including recess) can influence behavior, concentration and even grades.


Comment: (Emphasis on "Touch" strategies). Interviews with Albuquerque area therapists about using fidget toys to support attention.


Comment: (Emphasis on "Move" strategies). Twenty 9-year-old children participated in this study. Following a short bout of walking, researchers found that children were able to focus and selectively and perform more accurately on tasks provided.


Comment: (Emphasis on "General" sensorimotor strategies). A children’s storybook about Arnie and strategies he uses to help him focus and attend.
SECTION III
Select Articles on the Relationship of Self-Regulation to Learning

A. Refereed Professional Journals


Comment: This paper examines the interrelationship between emotion and cognition and provides good evidence of the importance of self-regulation competency for successful learning and adaptation to school. A strength of the article is that it challenges the current focus of early childhood education on academic learning and emphasizes the importance of promoting emotional, attentional, and behavioral regulation in children as potentially more effective in promoting school success throughout the school years as well as throughout life. A weakness of the article is its emphasis on top-down approach and incomplete/dated neurobiological support.


Comment: This study examines the role of self-regulation in emerging academic ability. Literature is cited that supports the central role of self-regulation to understanding how children adapt to and learn in the school setting. The results, although providing evidence related to the correlation between self-regulation and early academic ability, do have limitations due to the method of measurement utilized. The authors encourage further examination of the self-regulation construct, but yet the encourage promotion of academic achievement by fostering self-regulation.


Comment: The authors, coming from the discipline and perspective of educational psychology, provide an overview of the concept of self-regulation and its relationship to learning. They stress that effective coping and self-management can be facilitated through intervention strategies that focus on the student’s volition. This is compatible with the Alert Program®. The authors continue to provide a historical overview of assessment of self-regulation, the pros and cons of such tools and how these tools have changed as the definition of self-regulation has evolved into a more complex construct. Interventions common to their discipline are analyzed and presented. The authors conclude that classroom education, using the top-down and bottom up approaches, in conjunction with volitional strategies, can ultimately support optimal performance.


Comment: This study explores relations between children’s attention span-persistence in preschool and later school achievement and college completion. Results support that age 4 attention span-persistence skills significantly predicts the odds of completing college by age 25. The extensive review of literature in this article provides an in-depth overview of the growing body of evidence documenting the importance of self-regulation for long-term achievement and educational attainment.


Comment: The authors provide a review of research on individual differences in self-regulation and learning-related social skills. While the authors generally focus on social and cognitive self-regulation,
they do mention the connection between biologically based self-regulation (on which the Alert Program® focuses) and temperament and the link of these two with long-term academic and social outcomes. The article reinforces the need to address self-regulation in multiple contexts as well as the complex array of environmental variables (e.g., caregiver traits; family or community characteristics) and the need to collaborate with the adults in children's lives. Finally, the article provides a review of literature justifying the importance of self-regulation to learning and life.


*Comment:* The Chicago School Readiness Project (CSRP) evaluated low-income children's school readiness through the mediating mechanism of self-regulation. This multi component, cluster-randomized efficacy trial involved 35 Head Start-funded classrooms (602 children). Results support curriculums that target children's self-regulation skills through classroom-based processes due to significant pre-academic benefits observed in the sample population. These findings lend support to claims made in previous studies related to the importance of social, emotional and behavioral experiences to young children's early and long-term learning.

### B. Professional Newsletter/Magazines

#### Just Added


*Comment:* This article discusses the importance of addressing emotional and cognitive self-regulation in kindergarten and emphasizes that learning self-regulation in the early years deserves more attention than academic subjects. While the authors do not include the foundational biological self-regulation (that on which the Alert Program® focuses), the importance of including self-regulation as a core skill for learning is presented.

#### Just Added


*Comment:* This is one of a series of brief summaries of findings related to the development of executive function and self-regulation in young children. The importance of early experiences in shaping foundational skills for executive function and the resultant influence of these skills to learning and a healthy and productive life is summarized. Support for expanded training of teachers and implications for policy development are presented.

### C. Books/Manuscripts/Professional Texts

#### Just Added


*Comment:* This paper provides an overview of recent research of executive function (attention-regulation skills) and explores the implications of this research for educational practice and research.
SECTION IV

Select Articles on Self-Regulation Assessments / Issues


*Comment:* This article presents an overview of various conceptualizations of self-regulation (SR) that exist in the educational psychology research literature and also reviews the types of instruments that have been constructed to measure how well students self-regulate. Intervention programs and their effectiveness are discussed from the educational psychology frame of reference. While educational psychologists typically approach SR from a predominantly cortical level, this article provides useful insights into this perspective supporting more successful communication in an educational environment. In other words, the sensory-motor self-regulation domain (such as the Alert Program® approach) is not addressed but assessment tools presented that measure volition and social-emotional levels might prove useful for evaluating outcomes of interventions that focus on most any level of CNS processing.


*Comment:* This article summarizes a review of the literature that focuses on outcomes of interest in recent SI studies and to describe how these outcomes were operationalized and measured. The article begins by describing concerns and expected outcomes of children and families as a vital component when measuring effectiveness using sensory integration (SI) approaches. Studies conducted between 2007 and 2015 that examined intervention, using SI and sensory-based approaches, are examined in order to classify the outcomes measured and to compare the measures with issues parents find most important. Of significance, this review indicates that parents value skill development, self-regulation, perceived competence and social participation for their children. The article concludes with a list of selected assessments that measure outcomes that are congruent with child and family concerns, of which self-regulation is a primary component. This article provides valuable information supportive of practitioners tracking the success of their use of the Alert Program® in addressing self-regulation.


*Comment:* This article is of interest to researchers investigating sensory concepts and processing, as well as practitioners who wish to consume and understand research in this area. The article reviews physiological measurements frequently used to examine sensory processing and the adaptive capacity of the central nervous system in adjusting and coping with change or stress.


*Comment:* Using iCalm, a wireless sensor developed at MIT to measure electrodermal activity (EDA) and motions, 22 children (ages 3-10) with clinical diagnosis of Sensory Processing Disorder, participated in a study to analyze their physiological arousal in response to therapeutic activities during occupational therapy. This study suggest that use of the iCalm as a physiological evaluation tool, in addition to careful case-study analyses of resultant data may positively inform clinical practice and outcomes.

Comment: This article describes how a newly developed and validated measurement system, iCalm, may be used to more effectively inform therapists as to the child’s physiological arousal in response to therapeutic intervention. In addition to demonstrating an effective evaluation tool, the resultant data supports the importance of understanding each individual’s unique perception to therapy and subsequent emotional response. In other words, what may affect one individual with a high arousal may well affect another with a low arousal.

Just Added


Comment: This article presents a framework for conceptualizing interventions for children with varied sensory processing and integration issues. It advocates that practitioners use a multi-faceted approach in contrast to the misconceived notion that the Ayres Sensory Integration (ASI) approach is the only approach that can and should be used with this population. Bodison et al. (in press) categorized a multifaceted approach into three broad areas of intervention: 1) environmental supports and adaptations; 2) caregiver-focused interventions, and 3) child-focused, therapist led interventions. All three areas of described with examples provided with pros and cons discussed. The profession is encouraged to develop evaluation tools and engage in research to support clinical decision-making with regards to the multi-faceted approach. The Alert Program® is cited as a therapist-led sensory-based approach that incorporates SI theory constructs with other types of intervention practices.
SECTION V
Select Articles on the Theory of Sensory Integration


Comment: Florence Clark, President of AOTA presents her perspectives on the role of Sensory Integration Therapy (SIT) as an intervention approach for occupational therapists. Despite the continuing challenges and criticisms (while unjustified), she provides rationale for her belief that SIT will continue to be supported as an important intervention treatment option.


Comment: As part of AOTA’s Evidence-Based Literature Review Project, this Critically Analyzed Topic (CAT) provides a synthesis of a group of related articles. This particular CAT focuses on neurophysiologic evidence on the effectiveness of using a sensory-based approach in OT with children and adolescents. The studies analyzed provide “direct and robust support of neuroplasticity in many brain regions and that sensory input is an important mediator for this plasticity. Ayres’s (1972) original premise that sensory motor activity provides a foundation of learning is supported.


Comment: As part of AOTA’s Evidence-Based Literature Review Project, this Critically Analyzed Topic (CAT) provides a synthesis of a group of related articles. This particular CAT focuses on the evidence of different types of sensory processing/sensory integration problems in children and adolescents. Articles included in this synthesis were divided by type of disability: autism/Asperger’s disorder; attention-deficit/hyperactivity disorder; developmental coordination disorder; learning disorders; and other disorders (such as Fragile X Syndrome). Few studies have directly tested whether children and adolescents with sensory integration dysfunction/sensory processing disorders can be classified into subtypes. However, the research provides some support to suggest that subtypes exist and treatment strategies may need to vary depending upon the type. Research also highlights the importance of a complete assessment of sensory processing abilities due to variations of abilities with different diagnoses.


Comment: Results provide evidence that children with FASD demonstrate problem behaviors and sensory-processing impairments as reported by parents and that sensory-processing deficits co-occur with problem behaviors at a high rate in this population. This finding suggests that deficits in sensory processing may affect the ability of children with FASD to respond adaptively to their environments.


Comment: Highlights the importance of identifying and differentiating the root causes of over-arousal and shutdown.

Comment: This study explored changes in neuro-motor functioning, behaviors, and sensory modulation of children with special needs following a week-long camp program (intensive model) focused on improving sensory integrative functioning. The program was effective in reducing soft-neurological signs, extremes of behaviors and behaviors associated with ADD.


Comment: This article provides a systematic review and analysis of 27 studies related to the effectiveness of sensory integration (SI) intervention on the ability of children to engage in daily occupations and to apply these findings to occupational therapy practice. Results of the review suggest that the SI approach may result in positive outcomes in multiple areas identified.


Comment: The study evaluated the effectiveness of three treatment groups of children with sensory modulation disorders. Findings suggest that OT-SI may be effective in treating children with sensory modulation disorders. The article addresses the complex conceptual and methodological issues related to researching this area of practice.


Comment: This is a valuable article outlining the fidelity measures that were evaluated for validity and reliability. Fidelity refers to the extent to which the intervention delivered is true to the underlying therapeutic principles on which it is based. Fidelity guides a systematic analysis of intervention and provides a standard for determining whether an intervention approach is true to Ayres Sensory Integration (ASI). The article provides guidelines for researchers wanting to study the effectiveness of ASI.


Comment: A 2007 brief literature review of the concept of sensory modulation within the field of occupational therapy. Provides contributions of occupational therapy professionals in operationalizing the concept of sensory modulation.
SECTION VI

Websites that Provide Additional Support and References

www.AOTA.org

Comment: This PowerPoint presentation, titled Recess: An Important school routine (2013) is provided by AOTA as a resource to practitioners, advocates for the role of OT in promoting recess to support learning and social-emotional development/health. Membership required for access.

www.bccfa-seed.org

Comment: Shares fact sheets and information related to social emotional enhancement.

www.CanChild.ca

Comment: The McMaster University Centre for childhood Disability Research has an entire section on Sensory Integration with extensive references.

www.classroomseatingsolutions.com

Comment: Focuses on the sales of seating and standing desk options for students in the classroom.

www.missjaimeot.com/10-simple-fidgets-from-the-dollar-tore/

Comment: Resources related to sensory-motor information and activities designed specifically to help parents.

www.OT-Innovations.com

Comment: Tina Champagne’s website has a large amount of research and resources, including how to set up a sensory room, sensory diet handouts, and other valuable information.

www.pintrest.com/thesugaraunts/sensory-activities/

Comment: Includes numerous sensory-motor resources and sample activity ideas

www.SensoryConnectionProgram.com

Comment: This is a compilation of references and resources generated by Karen Moore and available on her website. The materials are directed with adults in mind but many have age-span possibilities.

www.SPDFoundation.net

Comment: Sensory Processing Foundation provides research, education and advocacy around issues related to sensory processing disorder. The on-line “library” allows access to relevant published literature.

www.standupkids.org/movement-learning/

Comment: Shares information about activity level and it’s relationship to health and learning.

www.TheSpiralFoundation.org

Comment: The Spiral Foundation of OTA Watertown is dedicated to helping children with sensory integration dysfunction lead full and productive lives. Their research section provides research related to the sensory processing.